

Applicant accordingly requests reconsideration of the rejections of the claims and the positions taken by Examiner Starsiak, based on Applicant's response of July 11, and the following comments regarding the additional points raised in the outstanding Final Office Action.

The text of the outstanding action, up to the "Response to Arguments" on p. 10 of the outstanding Office Action, is essentially a verbatim restatement of the Office action of March 11, 2003. The points raised therein were addressed by Applicant's response, filed July 11, 2003, and are believed to either rebut the position taken by the Examiner, or alternatively where Applicant cannot understand the reasons for the rejection(s) clarification was requested. Therefore, primarily Applicant will address the new points raised in the current Final Office Action beginning at the bottom of p. 10 and onward, and Applicant renews his requests made in our former response, and asks that a further more in-depth review of the points raised in the remarks of the response of July 11, 2003, be made.

Furthermore, as alluded to in the telephone interview of December 3, the cited Ivory et al (U.S. Pat. No. 6,277,258 B1) reference ("Ivory '258") perhaps warrants more discussion than pointing out that the Examiner did not make out a *prima facie* case for a rejection under Section 102. In addition to the discussion of the Section 102 rejection of claims 1,2,9,10, and 11 at pp. 57-58 of applicant's response, applicant will herein further address some distinctions between the work done by Ivory and the invention as set forth in the claims herein. This discussion is to assist the Office when analyzing the merits of the Application, and will follow the discussion of new points raised on pp. 11-13 of the current Final Office Action.

The new points raised and applicant's responses will be set out in turn below, and the Examiner's comments will be repeated verbatim for convenience in reviewing the matter.

Examiners Comments (page 11 lines 1- 6)

"Applicant's comparison of the present application and Ivory et al. is not well-take[n] because no "packing" is claimed in Ivory et al. Applicant's argument that "packings" are well-known in the art and need no illustration is not well-taken because while "packings" are known in the art the applicant fails to demonstrate that "packings" with the characteristics recited in the claims are known in the art. Applicant's change in Fig. 5 fails to overcome the objection because the change merely adds a numeral and a line leading to the interior of channel 60."

Applicant's Response:

The Examiner is not correct, as pointed out by Applicant at p. 28 of Applicant's response of July 11, Ivory '258 claims a packing material, as an element of certain claims, but does not specifically show it in the drawings, because it does not admit of a drawing. Applicant commends the review of column 6, lines 36-44 of Ivory '258, and claims 5, 18, 28, 40, and 44 of Ivory '258, which all set forth a packing as an element; as well as review of the drawings of that case. Applicant questions whether the Examiner is taking the position that a "chromatography support material" is not synonymous with a packing. If so, then applicant renews his request for clarification particularly on this point; because it should be incumbent upon the Examiner to explain why he is taking a position apparently contrary to the general understanding of those skilled in the art. Applicant is willing to work with the office to clarify the drawings to the extent they can be clarified on this point (see prior response). However, applicant is unsure how the claimed element can be shown, being that it is a packing, which could be any of a great number of things, which in one embodiment has a property (electrical resistance) that can be varied as a function of position (which would not be discernable to the eye, and can't well be shown except by perhaps a changing grayscale not allowed in patent drawings).

Examiner: (page 11 lines 6-9)

"Regarding the illustration of the "first orientation electric field generator" and the "second orientation electric field generator" applicant's referral of the examiner to pages 23 and 29 is not well-taken since neither of these terms is used on these pages."

Response:

The Examiner is perhaps somewhat off point. The issue is whether the element is shown in the drawings. The last paragraph on page 23, referencing FIG. 9, describes how one "orientation" electric field can be generated by applying a different potential to the upper (83) and lower (85) control surfaces (of the distributed sources of potential (84 and 86 respectively)). The upper and lower plates are shown, the surfaces are shown, how they produce a transverse, or "orientation" field is described. As explained these are connected to a differential potential.

The concept of a differential potential is well known to those skilled in the art. For example, if

the potential at one surface is one volt and the potential at the other is 1.5 volts, a .5 volt differential potential obtains. One skilled in the art will intuitively know that one or more sources of potential can be connected to the plates as mentioned in the disclosure, requiring only that the potential at the respective surfaces with respect to a specific reference or ground be different from each other. Power supplies providing potential are well known, and the drawings show one (18 in FIG. 1).

As to a well-known (and "off the shelf") element such as a power supply, a labeled "box" in the drawing is sufficient. This latter issue was discussed at length regarding the analyte concentrator in the Office Action of March 11, 2003 and Applicants response of July 11, 2003. The Office's position as enunciated by Examiner Starsiak (albeit on the other side of the argument and on another issue) is consistent with this contention made now. These "plate" surfaces (and some kind of power supply) are the elements making up the orientation field generator. The Examiner was directed to that language because it explains which elements are included as a part of the orientation electric field generator. With that background, the drawings can be checked to see if they show these elements.

The definition of a "generator" is "one or that which generates" (see dictionary excerpt, attached). That which generates the field is shown; specifically the two sources of distributed potential (or differential potential) by way of example are shown in FIG. 9, and a source of potential is shown, by way of example, in FIG. 1. A description of how this is done appears at page 23 in conjunction with the referenced drawing Figure as well as the other functions of these elements and their interactions in the description of the rest of the device throughout the disclosure.

The claim states "a first" orientation field generator, and the usage is by convention (if there is a "second" then the claim should set forth a "first"). Applicant is willing to work with the office to clarify this matter of form if deemed necessary, but contends that the issue of whether the element is shown in the drawings has been addressed.

Likewise, a "second" transverse or orientation electric field generator is described on page 29. Specifically, and with particular reference to FIG. 8, the sources of distributed potential, the elongated "lateral field electrodes" 102 and 104 "can be brought to different potentials" to "further alter molecular orientation." As described in the disclosure at p. 29; and like the description of the orientation field generator at page 23, the elements are described, and at least one example of each is shown in the drawings. Therefore, the contention that the elements are not shown in the drawings must be withdrawn or further explained.

Examiner: (page 11 lines 9-)

"Regarding the disclosure of the structure of the "contour resistor" Applicant's argument that "as is well established, a patent applicant can be his own lexicographer. Per Applicant's declaration, then the term has been coined to refer to structure in Applicant's original invention and embodiments thereof, *which previously did not exist*, to the Applicant's knowledge". The Applicant then duplicates sections of the specification which discuss the "contour resistors". These arguments are not well-taken for the following reasons. First, the examiner is not alleging that the written [description] is devoid of disclosure concerning "contour resistors". Instead, the examiner's position is the written description is inadequate. Applicant's argument that "contour resistor did not "previously exist requires that the design, fabrication, etc. of the "contour resistors" be detailed. Instead the disclosure recites only broad statements, which recite mostly desired characteristics of the "[contour resistor." Moreover, applicant's own prototype indicates that a detailed description of the contour electrode [(resistor?)] is required. Specifically, the contour resistor shown in the photograph has a complex structure. However, the written description fails to recite the design of the complex structure illustrated."

Response:

The applicant describes in detail the mathematical approach used to design contour resistors. By way of an example, a description of one example begins on page 30, line 7, and continues to page 34 line 9. This approach is graphically presented in Figure 10 with references to $x=0$ and $x=15$ cm.

As taught in the disclosure, the specific example implementation and profile shown in Figure 10 uses different resistivity inks to achieve the desired resistance in accordance with the disclosure. The photograph of the prototype was supplied in response to the Examiner's request, and illustrates that a substrate can, and has, been fabricated using the disclosed technique. The Examiner's contention that the supplied photo of the prototype shows the specification to be defective is not understood.

The Examiner seems to have failed to realize that the above-mentioned description of how to create a continuous electric field intensity profile begins with mathematically describing the profile, followed by integrating the electric field intensity profile to generate a voltage profile. The

voltage profile and the selection of a channel current that flow through both the channel and the contour resistors permits the determination of the incremental resistance of the contour resistor. Finally, a technique is selected to "put down" the resistor profile such as thick or thin film screening or an ink jet technology. Obviously this technology may be applied to other continuous electric field intensity profiles and only requires the specification of the electric field intensity profile.

As an aside, to understand the boundaries of this process, an extreme electric field intensity profile was created by the inventor that incorporated multiple linear electric field intensities over a very large dynamic range. The linear ranges were incrementally calculated (see table submitted with photograph with our letter of March 7, 2003) and the incremental voltages required to generate the electric field intensity specified were then determined (a form of piecemeal integration) and finally the incremental resistor values were calculated. The resulting substrate photograph was provided as well as the measured voltage using a resistive channel (this avoids the electrolyte-probe electrochemical reaction). Although the calculated versus measured results did not track exactly, the results indicated that the approach outlined in the specification is valid. The Examiner's comments indicate that he has not considered the mathematical exposition, and does not understand or appreciate its teachings and implications.

The description given in the patent application is sufficiently detailed to provide someone skilled in the art (an electrical engineer with experience in the fabrication of thick film or thin film or semiconductor devices) to create a device producing a continuous linear or nonlinear electric field intensity profile. The substrate in the photograph provided the patent examiner is a "complex" (as the Examiner called it) example of what can be achieved using the techniques disclosed in the application. If the Examiner would, like one skilled in the art, "do the math" he would appreciate this, contrary to the conclusion he has instead drawn.

Examiner: (page 12 lines 2 -- 9)

"In addition, it is well-established that 'it was the examiner's duty to compel a disclosure which would enable those skilled in the art to practice the invention without hav[ing] to design circuitry not shown to be readily available in the prior art', In re Hirsch 49 CCPA 745 F. 2nd 251. Regarding the other embodiments of the inventions, the examiners position is not that the written description is devoid of discussion of these embodiments. Instead the examiner's position is that the disclosure of these alternative embodiments so limited that the disclosure represents "ideas" for

alternative embodiments.

Response:

The Applicant, frankly, is uncertain as to the intended meaning of the above statements. If the Examiner is suggesting that the electric field intensity gradient requires additional supporting circuitry to function, similar to Ivory's electrode electronics, the answer is no. The distributed (contour) resistors, in electrical contact with the electrolyte of the channel and a high voltage power supply applied at either end of the channel produces a continuous electric field intensity gradient. The Examiner's final comments are not understood, in light of the discussion of the issue in Applicant's response of July 11, 2003 and the discussion herein, including that set forth below.

Examiner: (page 12 line 9 to page 13 line 3)

"Regarding the issue of the Electroosmotic flow generator, the first electric field orientation generator, and the second electric field orientation a generator. The applicant fails to address the questions raised by the examiner. Instead, the applicant merely recites portions of the written description directed to the elements. The applicant fails to describe how these portions of the written description answer the question raised by the examiner in the first Office action. Again, the examiner's position is not that the written description is devoid of any disclosure of the above elements."

Response:

Applicant directed the Examiner to those portions of the Specification and the drawings referenced thereby, because the teachings and disclosure support the position of the Applicant, per applicant's response of July 11, which does address each and every point raised by the Examiner. That the Examiner does not appreciate the significance of, or understand the exposition of, the subject matter there presented is apparently because the Examiner's background is different from that needed to appreciate the teachings of the disclosure. Applicant is confident that on reconsideration of Applicant's responses of July 11, and a more careful reading of that and the portions of the disclosure referenced thereby, the Office will appreciate that the Examiner is mistaken, and/or needs to provide further explanation the rejections in light of Applicant's response.

Examiner (p. 12 lines 15-20):

"Regarding[] the applicant's arguments directed to the 112, second paragraph [rejections], these [are] arguments are not well-taken because except for the minor 112 problems in claims (e.g. incorrect dependency) the applicant's response is that he does not understand the rejection. The MPEP specifically states that in a response the applicant must specifically point out the errors of the examiner. Hence, repeatedly stating that a rejection is not understood is non-responsive."

Response:

Applicant well and truly does not understand the rejections where Applicant has stated that fact. Largely this is because there appears to be a basic misunderstanding, or lack of understanding, of the salient background principles and of the disclosure itself on the part of the Examiner, and accordingly, mistakes of fact on the part of the Examiner. There also appears to be a lack of true understanding of the teachings and import of the cited Ivory '258 reference on the part of the Examiner. Persons skilled in the art will readily appreciate the Examiner's apparent lack of understanding. In order to have a presumption of validity apply to any patent eventually granted on this application, it is Applicant's position that this must be corrected by the Office, and particularly so because the record is confused, at least to the extent the Examiner is factually mistaken. Applicant realizes that every application must be examined by some Examiner in some group somewhere in the Office. But the fact that an application crosses disciplines should not be a stumbling block to efficient, competent, examination; and to later enforcement of the patent rights granted. Applicant requests, nay, begs, that the application be reconsidered, and that additional expertise be brought to bear if need be, to authoritatively pass on the issues raised in the prosecution to date.

Applicant is prepared to submit additional declarations from other persons in the fields of electrical engineering and device fabrication on the issues raised if the Office feels this would be helpful. However, review of the response of July 11 and the above comments should inform the Office that the reasons the rejections are not understood was stated insofar as it could be stated. In general, a basic disagreement regarding the factual basis of a rejection should warrant reconsideration of the rejection, particularly where applicant has pointed out the factual errors of the Examiner in the prior response. The reasons the rejections are not understood is that the factual basis of the rejections appears to be mistaken, as pointed out by the Applicant in the previous

response. Applicant went on, at considerable length, to point out the apparent factual errors in that response. Applicant asks that these be (re)considered on this point.

Examiner (p. 12 line 20 to p.3 line 3):

" Regarding the rejection of the claims in view of Ivory et al, applicant merely points out structural differences between the invention and the reference. The applicant fails to specifically address the details of the rejection e.g. why the language which the examiner considers to be non-structural should render an apparatus claim patentable."

Response:

The Examiner is again factually mistaken. Applicant points out an element of the claim (which contrary to the Examiner's assertion, distinguishes based on structure) which is not met in the Ivory '258 reference cited under Section 102. That the Examiner does not seem appreciate that he has not made out a *prima facie* case for a rejection of the claim based on structural differences between the element of the claim and the cited reference underscores Applicant's contention that the Examiner does not understand the work that Ivory has done, nor does he understand the work that Applicant has done. Applicant again refers the Office to pp. 57-58 of the July 11, 2003 response, and restates that the rejection is specious, and must be withdrawn for at least the reasons therein stated. Briefly, that structure of the Ivory device disclosed allows for different flowpaths for the sample and the electrolyte. The sample is contained in the separation channel (12) by the membrane to a first flowpath, but the electrolyte can follow a different flowpath outside the membrane, and diffuse through the membrane and can flow also in the electrode chamber (14). Accordingly in the cited reference different flowpaths for the sample and the electrolyte are accommodated (encouraged, in fact, as the electrolyte "preferably" follows a flowpath of opposite direction outside the membrane than the sample confined by the membrane). Applicant's structural limitation is that the separation channel be configured so that it confines both sample and electrolyte to the same flowpath. This element is not found in the cited reference.

Some General Comments:

The Applicant has used the "tools" of his craft to describe physically and mathematically the subject matter of this patent application, and in response to the Examiner's request for experimental

verification of the teachings thereof (which applicant was not required to provide, but did so in a spirit of cooperation) Applicant has provided results showing protein separations and the measurement of a complex electric field intensity profile along a length of channel, which approximates the initial piecemeal paper design. The design approach and examples given within the patent application were the best mode of practicing the invention known to applicant at the time of filing of the Application. The application describes the separation problem followed by step by step mathematical descriptions of each portion of the design process, followed by presentations of graphical results of the contour resistance with channel length, the voltage profile required as well as a graphical presentation of the electric field. Additional and alternative enhancements and design configurations are also described.

However, the Examiner finds this information inadequate and specifically states in the outstanding Final Office Action that "The applicant presents no[t] experimental evidence or theoretical reasoning that contour resistors will produce a continuous electric field intensity gradient" (page 3 lines 15 - 16) and further states that the Applicant "...provides no design or fabrication details of any of these resistors and none of these resistors are illustrated" (page 4 lines 4-5). But these statements are clear error for at least the reasons cited in the response of July 11 and the foregoing discussion. The Applicant is unable to otherwise respond to such criticism because the criticism is not logical or based in fact. The Examiner does not seem to understand the mathematical expositions of the subject matter referenced, which expositions are the principal "tools" used by the Applicant to describe his invention, including those respects complained of by the Examiner. Likewise, the Examiner does not appear to comprehend the background concepts known to those skilled in the art in this multidisciplinary endeavor. For at least these reasons reconsideration by the Supervisory Patent Examiner is hereby requested.

Now, as mentioned above, some further discussion of the cited Ivory '258 reference is deemed warranted in view of the interview between Applicant's representative and Examiner Nguyen. Recall that Examiner Starsiak stated at p. 9 of the outstanding Office Action (repeating from the first Office Action) "Claims 1, 2, 9, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Ivory et. al.

"Ivory et al teaches [col.5, lines 9-19]: "The present invention provides an electrophoretic device and method in which a charged solute such as a protein can be simultaneously separated and concentrated by applying a constant force (e.g., hydrodynamic force due to buffer flow) and opposed

by a gradient in a second force (e.g. electric field). According to the invention, a constant hydrodynamic force is opposed by a gradient in the electric field). According to the invention, a constant hydrodynamic force is opposed by a gradient in the electric field which allows charged molecules to focus in order of their apparent electrophoretic mobilities."

Ivory and Applicant do use similar separation techniques (gradient and counterflow) but differ on the generation of the electric field intensity gradient and in the use of a membrane. A description of Ivory's approach (from published articles, etc.) is given in Applicant's specification at page 2 line 13 to page 7 line 13. Specifically, the specification distinguishes Ivory's approach as "...a construction of segments having differing slopes depending upon the voltages applied at each electrode..." (page 6 lines 16 and 17). An example of an electric field intensity profile using Ivory's approach is graphically presented in FIG. 2. Paraphrasing Applicant's disclosure at page 6 lines 17 to page 7 line 5, the profile shows the electric field intensity goes to zero at each electrode, and between electrodes the electric field intensity is constant. Thus, by putting in more electrodes, and spacing them closer together, and separating the sample physically some lateral distance from the electrodes (for example by using a membrane), an approximation of the ideal smooth monotonic function is approached. However, as shown by the Ivory '258 reference, considerable complexity attaches to this approach.

Applicant's approach relies on a continuously varying resistor (or set of resistors) that is in continuous contact with the separation channel (refer to Figure 4, item 46; and Figure 10, item 112). This enables the smooth monotonic function without all the complexity (and none of the "circuitry" the Examiner apparently expected should be required to be disclosed in the present application).

One of the salient and fundamental differences between Ivory and Applicant's work lies in Ivory's use of voltage programmable electrodes in contact with the electrolyte (and the electrolyte being able to flow both inside and outside the separation channel - the point where the Examiner's *prima facie* case for lack of novelty fails), versus Applicant's use of distributed (contour) resistors in electrical contact with the separation channel. In Ivory's approach the smoothness of the electric field intensity gradient, and hence the resolving ability of the separation channel, is limited by the spatial relationships and number of the electrodes, while in Applicant's work the distributed resistor(s) are in continuous contact with the separation channel and have virtually continuous variation in resistance between channel increments (the smallest channel increment tested to date is 5 microns, which is limited by the measurement device).

Note that in Applicant's approach the voltage for the channel is supplied by an external high voltage source applied to the ends of the channel (cathode and anode of Figure 10 items 40 and 114 respectively), which voltage is modified in a predetermined way by the contour resistor as a function of position along the channel. Ivory uses instead of (or in addition to) these a multiplicity of independent voltage programmable electrodes. Applicant's approach enables inexpensive disposables, admittedly not field intensity slope adjustable "on the fly" like Ivory, but much simpler. The invention creates the possibility of faster, cheaper, test-specific devices requiring much less complexity off the disposable as well.

In sum, a principal difference in the generation of an electric field intensity gradient between Ivory's work and that of Applicant is the use of a finite number of programmable electrodes by Ivory, which produces a stair-step electric field intensity profile versus the use of distributed resistors in continuous contact with the separation channel by Applicant, which produces a true continuous electric field intensity profile. These approaches are fundamentally different. Moreover, the results are different, because Applicant's approach can yield a fairly true continuum, whereas Ivory's device appears to create a stepped approximation of one, and Applicant's is likely much less expensive, just as it is much simpler.

The Ivory reference states in column 18, lines 41-43: "An electric field gradient in any shape, linear or nonlinear, continuous or stepwise, can be produced with a limitation to the conductivity of the buffer. This states that Ivory has created a continuous electric field intensity gradient. However, the word "continuous" is being used differently by Ivory and Applicant LeFebvre. Ivory's approach with electrodes produces a constant voltage drop between two adjacent electrodes. He describes his approach mathematically in column 18 lines 1-40 where he defines R_i as the resultant resistance between any two electrodes, which consists of the resistance of the buffer, the resistance of the fixed resistor between the two electrodes and a third "process dependant" resistor (e.g. the resistance of the particular sample at a particular time), which is of course dependent on the separation process. The resistance of the buffer (i.e. the particular electrolyte solution) and the separation process-dependent resistance create a constant resistivity between the electrodes, while the resistor between the electrodes is only a two terminal device and therefore has no distributed properties.

Both the buffer resistance and the process dependent resistance are by their very nature distributed resistors but exhibit constant resistivity. This means that if the distance between the two electrodes were divided into, say, 10 increments, each increment would have one tenth of the

incremental resistance of the total resistance between the two electrodes and one tenth the voltage drop per increment, which in turn generates the same identical electric field intensity per increment or between electrodes. To form an electric field intensity gradient the resistance must change in each sequential interval between electrodes, which in turn causes the voltage to change in each sequential interval and therefore the electric field intensity (volts/interval) also changes: hence a gradient.

However, the use of electrodes in Ivory's invention forces the electric field intensity gradient between electrodes to be constant, not a gradient. Ivory can therefore approximate a continuous electric field intensity gradient by programming the electrodes to form a series of electric field intensity steps, but cannot claim that the electric field intensity gradient is continuous in the same sense that Applicant is.

Applicant's patent application describes several techniques to produce a truly continuous electric field intensity gradient. For example, by using resistors that are in physical contact with the electrolyte of the separation channel and then varying the width of the resistors, overlaying materials of different resistivities (and altering the width of the layers), as shown graphically in Figure 4 (ref. 46), the electric field intensity gradient is continuous, as applicant's "increments" can approach the infinitely small. Since the width of a hypothetical incremental resistor segment is always changing no matter how small the increment taken, the resistance value of each resistor must in turn also be changing within the increment. The distributed (contour) resistor(s) are in parallel with a corresponding hypothetical increment of electrolyte (and analyte sample) and therefore their parallel resistance must also be changing, resulting in a changing electric field intensity (a gradient) in the channel electrolyte regardless of how small the increment is taken (down to approaching the atomic level presumably).

For these reasons, the use of the word "continuous" in the Ivory '258 reference probably should be modified by the word "approximating" or "approaching" since the resulting electric field intensity gradient according to Ivory's methodology results in electric field intensity steps (refer to Figure 2 of Applicant's disclosure).

By overlapping resistor shapes with different resistivities as shown in Figure 10 (reference no. 112) complex voltage gradients may be created which generate continuous electric field intensity vs. channel position functions over several decades of dynamic range. Moreover, the ability to create a continuous electric field intensity gradient is very important because this will permit the separation of proteins with very similar mobilities. It also should be noted that Ivory is limited by the number

of electrodes that may be added to the separation channel because of the high electronic overhead (*i.e.* the "circuitry" Examiner Starsiak apparently expects) which each electrode requires, in addition to physical difficulty of packing more electrodes per unit length of channel. Applicant's approach has no such limitation since the distributed or contour resistors require no additional electronics, and the well-known fabrication techniques disclosed can produce variation in resistance down to a very small scale increment as discussed above.

That the application discloses additional embodiments and the claims may read on other means known to Applicant at the time of filing for producing a continuous intensity gradient, and which are disclosed in the Application, is not to be held against the Applicant in claiming scope to which he is entitled. Additional disclosure to comprise the full knowledge of the applicant at the time of filing is one of the goals of the patent statutes. Applicant is confident that possessed of the teachings of his disclosure one skilled in the art can produce contour resistors of other configurations than those, say, of FIGs. 4, 8 or 10. For example the same guiding principles of design also apply to other configurations, such as those disposed entirely in the channel (*e.g.* the embodiments disclosed in FIG. 5, and related discussions in the written specification). The claims embracing this subject matter are supported by the best mode known to applicant at the time of filing and it is submitted that this statutory requirement has been met. For example, the changing cross-sectional area of resistive material verses other material in the filament will be appreciated to be directly analogous to the changing width of the distributed resistor in the lateral embodiments. One skilled in the art will appreciate that the equations still define the design, and that they can use appropriate geometric factors and the design-guiding equations and do the same thing whether the distributed resistor extends outward from the channel into the confining structure, or inward into a cylindrical fiber within the channel as shown in FIG. 5.

Moreover, as to another example constructively reduced to practice in the application, the "packing" having a varying resistance: Applicant has stated that packings are well known. Semiconductor (*a.k.a.* resistive) packings are known (see, again, the Ivory '258 reference at col. 6 lines 41 and 42). Applicant has disclosed that if the resistance of the packing is varied continuously as a function of position along the channel, a change in the potential, and, accordingly a change in the field intensity, is likewise produced. The amount to change the resistance per unit length, to obtain a desired field intensity gradient change in that unit length, and hence the shaping of the voltage profile and intensity continuum of the electric field, is disclosed. One skilled in the art can modify

one of the well-known materials used as packing to alter its resistivity in accordance with the disclosure and obtain a continuous field intensity gradient desired as disclosed herein. It will again be appreciated that the statutory requirements have been met.


CONCLUSION

In light of the above, Applicant respectfully submits that pending claims 1-62 are in condition for allowance; and Applicant requests reconsideration of the final rejections for the reasons discussed in the previous response and as set forth herein. Applicant wishes to avoid the extra burden on the Office of an Appeal of this case, and would appreciate the Office staying in contact with Applicant's representative with respect to the matter so that filing of a Notice of Appeal, if required by statutory deadlines, will not interfere with the reconsideration of the Final Office Action.

The Commissioner is hereby authorized to charge any additional fee or to credit any overpayment in connection with this Amendment to Deposit Account No. 20-0100.

DATED this 16th day of December, 2003.

Respectfully submitted,

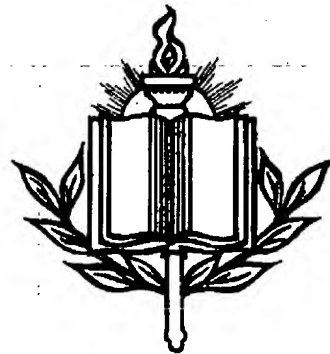


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